Attachment 5
Project Work Plan

5.1 Project Scope and Objectives

The proposed project consists of the construction of six new groundwater monitoring wells and collection and evaluation of geologic, hydrogeologic and groundwater quality data. As described in Section 4.3 of Attachment 4, the objectives of the proposed project include:

- Further assessing the feasibility of aquifer storage and recovery using wintertime Russian River water and infiltration with local stormwater as techniques for enhancing groundwater recharge in the Sonoma Valley;
- Further characterizing and monitoring groundwater levels and water quality in the southern Sonoma Valley in an area where potential saline water intrusion is a concern;
- Improving the groundwater-level and groundwater quality monitoring network in Sonoma Valley, which will help meet the objectives for the California Statewide Groundwater Elevation Monitoring (CASGEM) program and Salt and Nutrient Management Planning (being developed by the Sonoma County Valley Sanitation District/Water Agency through a Planning Grant awarded by DWR through the Bay Area IRWM Plan);
- Improving the understanding of hydrostratigraphic conditions in southern Sonoma Valley; and
- Providing information to the community on the benefits of enhanced groundwater recharge.

To accomplish these objectives, the following scope of work has been developed:

1. Construction of two multi-level (or nested) groundwater monitoring wells to depths of 400 and 660 feet, respectively, with one well in a localized area of groundwater level decline which will also be used for monitoring during the aquifer test (see number 2 below), and the other well in an area of saline water intrusion;
2. Performance of an aquifer test using an existing inactive municipal supply well to initially assess ASR feasibility;
3. Geochemical modeling of water quality and aquifer matrix geochemistry to assist in designing and permitting an aquifer storage and recovery pilot project;
4. Construction of four shallow groundwater monitoring wells to evaluate potential sites for stormwater capture and infiltration projects;

5. Development of a pilot education program for the middle-school grades (grades 6 through 8) based upon groundwater recharge and stormwater retention techniques

Communication with the Public, Stakeholders and Other Interested Parties

Water Agency will communicate and coordinate the project activities with the Sonoma Valley Basin Advisory Panel and Technical Assistance Committee in accordance with the Sonoma Valley GWMP public outreach plan. This will involve giving regular updates at regularly scheduled meetings regarding grant award status, project kick off, field activities, reporting activities, and project results.

The existing process to disseminate the results and information gained from the proposed project to interested parties, stakeholders, agencies, and the public includes:

- Discussion at quarterly Basin Advisory Panel meetings
- Discussion at Technical Advisory Committee meetings
- Publish in newsletters and post on Sonoma Valley Groundwater website
- Publish in well installation report and post on Sonoma Valley Groundwater website
- Publish information in annual Groundwater Management Program report and post on Sonoma Valley Groundwater website
- Post data collected on Sonoma Valley Groundwater website

Permits and Environmental Requirements

Water Agency will prepare the documentation necessary to comply with CEQA, as described in subtask 1.2 below. Drilling and encroachment permits will be obtained consistent with county and state requirements. Proper permits for encroachment and monitoring well installations will be acquired from Sonoma County Permit Resource and Management Department (subtask 1.3). All activities will be performed in compliance with federal, state and local regulations.

Both the City of Sonoma and the County of Sonoma Open Space and Agricultural Preservation District are active members of the Sonoma Valley Groundwater Management Program Basin Advisory Panel and have been part of the planning and discussions surrounding the proposed project. Water Agency will prepare and execute Right of Entry agreements as part of subtask 1.3.

Evaluation of Progress and Performance

The Water Agency will evaluate and report to DWR on progress and performance of the scope of work through regular communication with DWR and the timely preparation and submittal of detailed quarterly Progress Reports, which will include an executive summary, description of project activities to date, description of major accomplishments, discussion of any issues or concerns that may affect the project schedule or budget, activities planned for the following

quarter, cost and schedule status. This will enable tracking of the scope of work and associated budget through each step of the proposed project.

Project Tasks

To complete the proposed scope of work the following five tasks have been identified and are further described in the following sections:

Task 1.0 – Pre-Field Activities

Task 2.0 - Drilling and Well Construction

Task 3.0 – Performance of Aquifer Test

Task 4.0 – Geochemical Modeling

Task 5.0 - Project Management, Coordination, and Reporting

TASK 1.0 – PRE-FIELD ACTIVITIES

The subtasks below must be performed before conducting activities in the field:

1.1. Finalizing of the well locations

1.2. CEQA and environmental activities

1.3. Obtaining relevant permits

1.4. Contracting

1.1. Finalize Well Locations

The locations identified in Figures 4-1 and 4-2 of Attachment 4 are approximate locations for drilling. These well locations were chosen based on their location with respect to the following:

- a proposed ASR pilot study at City of Sonoma Well No. 7
- distribution of salinity in groundwater in southern Sonoma Valley
- groundwater pumping depressions
- locations deemed potentially favorable for local stormwater recharge

Final well locations will be based on field inspection of the suitability of each for drill rig and future monitoring access, and to avoid any undesirable conditions.

A utility survey, either private and/or Underground Services Alert, will be performed prior to drilling to clear the final selected drilling locations.

1.2. CEQA/Environmental Activities

The proposed project would involve

- Construction of two nested groundwater monitoring wells
- Performance of an aquifer test using an existing inactive municipal supply well

- Geochemical modeling of water quality and aquifer matrix geochemistry to assist in designing an aquifer storage and recovery pilot study
- Construction of four shallow groundwater monitoring wells to evaluate potential locations for stormwater recharge projects

The Water Agency and its contractors will apply best management practices to minimize environmental impacts to noise resources from drilling and construction operations and will comply with all local ordinances related to noise abatement or construction hours.

Pursuant to CEQA Guidelines: §15304 Minor Alterations to Land and CEQA Guidelines: §15306 Information Collection, the Water Agency has prepared a Notice of Exemption (in accordance with CEQA, the State CEQA Guidelines, and the Water Agency's Procedures for the Implementation of CEQA) stating that, the construction activities for the proposed project would not have a significant adverse impact on the environment. In addition, the Water Agency's monitoring efforts are for information gathering purposes which will help fill some of the data gaps identified in the Sonoma Valley Groundwater Management Plan and meet the objectives for the CASGEM program and Salt and Nutrient Management Planning being undertaken in Sonoma Valley.

The proposed project will not require environmental permits because project activities are within urban or previously developed locations and these locations do not support significant vegetation, special status species habitat, and wetland resources. The proposed project does not require entitlements because project activities are located in public rights-of way.

1.3. Permitting Process

Water Agency, which is responsible for the monitoring and maintenance of the county-wide and Sonoma Valley groundwater programs, has a good working relationship with Sonoma County's Permit and Resource Management Department (PRMD), who administers the well permitting program, and therefore will be able to internally coordinate the required well drilling permits and inspections. Permits will be prepared under the supervision of a California Professional Geologist or Professional Engineer and submitted with appropriate documentation including well construction diagrams and descriptors.

Well construction and encroachment permits will be obtained consistent with county and state requirements. Proper permits for encroachment and monitoring well installations will be acquired from PRMD following selection of the drilling contractor and approximately one month prior to the initiation of drilling activities. Work activities will be performed in compliance with federal, state and local regulations. The proposed project will require the attainment of well permits.

A well completion report will be prepared and provided in the final report submitted to DWR.

Water Agency will comply with all local, state and federal environmental regulations during drilling operations. Water Agency and its contractors will apply best management practices to

minimize potentials environmental impacts from drilling and construction operations including suspended solids impacts to local environments, and will comply with any potential storm runoff requirements of the Regional Water Quality Control Board. Additionally, Water Agency and its contractors will comply with any local jurisdictional requirements related to noise abatement or construction hours. The wells will be drilled and constructed by a drilling contractor licensed in the State of California possessing a valid C-57 license. Drilling activities will be conducted under the driller's health & safety plan, which must be approved by the California Professional Geologist or Professional Engineer that will oversee drilling.

1.4. Public Notice and Drilling Contractor Selection

Water Agency will prepare and/or approve contract and technical specifications for the proposed project, and will solicit bids from qualified drilling contractors with the technical capabilities to complete wells in the area. Water Agency has considerable experience in ensuring that construction projects, both large and small, are bid on and constructed in compliance with regulatory requirements and industry standards. Water Agency also has substantial experience bidding and constructing similar multi-phase monitoring well construction projects, including the recent construction of two nested 500-foot deep groundwater monitoring wells as part of a 2008 LGA grant received by the Water Agency from DWR.

Task 2 – Drilling and Well Construction

2.1. Drilling & Construction of Two Nested Monitoring Wells

Drilling and construction activities for the two nested groundwater monitoring wells include the following:

- Drill exploratory borings at the two locations to estimated depths of 400 and 660 feet, respectively.
- Collect drilling cuttings every five feet, classify materials according to the Unified Soil Classification System, and prepare a lithologic log during drilling.
- Collect aquifer matrix samples from cuttings from Sonoma Garden Park location.
- Perform borehole geophysical logging in each borehole.
- Review lithologic and borehole geophysical logs and design nested wells.
- Ream borehole to 9- to 16 inches diameter to the total depth of the well (based on well design).
- Sequentially construct two to three 3- to 4-inch diameter Schedule 80 PVC monitoring wells in each borehole, based on well design.
- Develop wells.
- Install surface completion at each well site.

- Dispose of drilling fluids.
- Site clean up and site restoration as necessary.
- Survey the wellhead elevations.
- Collect groundwater elevations from each well.

At each nested monitoring well location, a single exploratory boring will be drilled with a diameter of 6-inches using a direct mud rotary drilling rig. During drilling, cuttings samples will be collected a minimum of every five feet, and materials will be classified by a California Professional Geologist following the Unified Soils Classification System. Lithology and well construction information will be recorded on a well completion log during field activities. The total depth of the exploratory borings is anticipated to be approximately 660 feet at the Sonoma Garden Park location (to be consistent with the total depth of the nearby City Well No. 7), and 400 feet at the Highway 121/Broadway Avenue location (based on review of existing well logs in this area which indicate the majority of nearby wells are shallower than 400 feet).

Additionally, at the Sonoma Garden Park location, three aquifer matrix samples will be collected from the drill cuttings and submitted for laboratory analysis of the following geochemical parameters:

- Ritevelt X-ray diffraction mineralogical analysis
- X-ray fluorescence analysis
- Acid Insoluble residue analysis
- Cation exchange capacity (w/ leachate analysis)
- Thin section petrographic analysis
- Scanning electron microscopy

The aquifer matrix samples will be collected at depths corresponding to the primary aquifer zones screened by City Well No. 7 (i.e., nominal depths of 480, 520 and 600 feet bgs) and will be utilized to complete the geochemical modeling to support future ASR pilot-scale testing, as further described under Task 5.

Geophysical logging will be performed in each exploratory borehole. Geophysical logging will include spontaneous potential, resistivity (single point, and 16-inch and 64-inch normal), natural gamma, and caliper logs. The geophysical logs will be used to supplement lithologic characterization and to facilitate final selection of the screen intervals for the proposed multi-depth groundwater monitoring wells. The caliper log will be used to confirm interpretation of the geophysical logs and verify the final diameter of the boring prior to well installation. Water Agency will evaluate the results of the geophysical logging and lithologic log to determine the proper design and screened interval of each well in the well nests.

Upon completion of drilling, sampling, and logging, boreholes will be telescopically reamed to 9- to 16-inches inches in diameter depending upon the number of screened zones selected, and two to three separate wells with 10 to 50-foot screened intervals will be installed in the borehole (pending evaluation of lithologic and geophysical logs). Nested wells will be installed sequentially in the borehole, and will be installed in accordance with California Well Standards

and county regulations. All wells will be constructed with Schedule 80 PVC casing and PVC well screen, suitable sand filter pack extending 2 feet below and 2 to 5 feet above the screened interval, with an upper fine sand spacer of 2 feet thickness, and a bentonite seal of no less than five feet on top of the fine sand spacer. Once the bentonite seal has hydrated, an annular seal of neat cement or sand-cement slurry is placed in the annular space between bentonite seals and up to ground surface.

- The proposed nested monitoring well at the Sonoma Garden Park will be constructed using 4-inch diameter PVC casing (to allow for placement of 3-inch diameter sampling pumps during subsequent ASR pilot-scale testing). The proposed well will be constructed similar to City Well No. 7 with two discrete screened intervals anticipated to be placed at the following nominal depths: 225 and 600 feet bgs.
- The proposed nested monitoring well at the Highway 121/Broadway Avenue location will be constructed using 3-inch diameter schedule 80 PVC casing with two to three discrete screened intervals placed at depths appropriate to monitor the shallow and deeper aquifers identified during borehole drilling and geophysical logging.

The depths of these wells will likely correspond to the Quaternary Alluvium for the shallowest well, and the remaining deeper wells will likely completed within the Huichica Formation, which includes fluvial deposits of gravels, sand and clay with interbedded tuff. An initial round of groundwater samples will be collected from the completed nested monitoring wells and submitted to a laboratory for analysis of chloride and total dissolved solids (TDS). These wells will be incorporated into the basin-wide groundwater monitoring network and will provide continued information on the groundwater quality, levels, and gradients. Additionally, the nested well located at the Sonoma Garden Park will be used to monitor groundwater levels during the proposed aquifer test and lithologic samples collected during drilling of the borehole will be analyzed for geochemical parameters and used in geochemical modeling to support a future ASR pilot study.

2.2. Drilling & Well Construction of Shallow Monitoring Wells

Drilling and construction activities for the four shallow groundwater monitoring wells include the following:

- Drill 50-foot borings in four locations.
- Collect drilling cuttings every five feet, classify materials according to the Unified Soil Classification System, and prepare a lithologic log during drilling.
- Construct a 2-inch diameter Schedule 80 PVC monitoring well in each borehole, based on well design.
- Develop wells.
- Install surface completion at each well site.
- Site clean up and site restoration as necessary.
- Survey wellhead elevations.

- Collect groundwater elevations from each well.

The four shallow borings will be drilled with a hollow-stem auger drilling techniques. During drilling, lithologic samples will be collected using a split-spoon sampler a minimum of every five feet, and materials will be classified by a California Professional Geologist following the Unified Soils Classification System. Lithology and well construction information will be recorded on a well completion log during field activities.

The shallow monitoring wells will be installed in accordance with California Well Standards and county regulations. All wells will be completed as 2-inch diameter monitoring wells constructed with Schedule 80 PVC casing and PVC well screen, suitable sand filter pack extending 2 feet below and 2 to 5 feet above the screened interval, with an upper fine sand spacer of 2 feet thickness, and a bentonite seal of no less than five feet on top of the fine sand spacer. Once the bentonite seal has hydrated, an annular seal of neat cement or sand-cement slurry is placed in the annular space between bentonite seals and up to ground surface.

2.3. Well Development and Surveying

Monitoring wells will be developed initially by the driller using a surge block and air lifting to immediately begin to clear up the wells and clean up the borehole wall from the drilling process. Wells will be subsequently developed using surge block and airlift until wells are fully developed and clear based on measured turbidity. Debris in the well bottom will be removed via bailing. Well development efforts will be recorded including volume of water and debris removed, and general parameters including temperature, conductivity, and pH throughout the development process.

Following well construction and development, traffic rated utility box or stove pipe and bollards will be installed to protect the well from vandalism and damage. Each well will be properly permanently marked with well identification number and state reference number. Subsequent to completion of all drilling activities fluids and cuttings will be properly disposed of.

The wells will be surveyed in by the Water Agency survey crew using industry standard total station survey methods or comparable. The site geologist will record groundwater elevations from each well following drilling operations and surveying. A well completion report will be prepared and provided in the final report submitted to DWR.

2.4. Groundwater Monitoring

Dedicated pressure transducers with temperature sensors will be installed in all the newly installed groundwater monitoring wells, allowing for correlation with similar data being collected from other nested wells and shallow monitoring wells in Sonoma Valley. Data will be downloaded from the new wells on a routing bases (e.g., bimonthly) and plotted at least semi-annually.

The new monitoring wells will be incorporated into the existing Sonoma Valley groundwater monitoring network and the CASGEM monitoring network for Sonoma Valley. Sampling

activities are being coordinated under the Sonoma Valley GWMP and are funded by Water Agency and under the Cooperative Funding Agreement (described in Attachment 2).

Groundwater quality samples will be collected and analyzed for physical characteristics, chlorides (US EPA Standard Method 300), and total dissolved solids (US EPA Standard Method 2540C). The wells will be purged to allow a minimum of three well volumes to be removed from the borehole annulus prior to sampling and temperature, pH and conductivity will be measured and recorded.

Specific groundwater sampling tasks to be performed in conjunction with sampling include:

- Record groundwater elevations prior to purging.
- Ensure sampling and purging equipment is clean and properly decontaminated prior to entry into the well.
- Collect the water samples in laboratory supplied containers.
- Conduct well purging, sampling and handle and preserve samples in accordance with EPA protocols *Sampling and Analysis Plan and Groundwater Monitoring Protocols* for the Sonoma Valley GWMP (April 2011).
- The groundwater samples will be analyzed by a State of California Certified Laboratory that is in compliance with federal and state testing requirements in the Environmental Laboratory Accreditation Program. Water Agency will require laboratory quality assurance measures.

All water level and water quality information will be provided to DWR.

Task 3.0 – Aquifer Testing

Aquifer testing will be performed on the City of Sonoma existing inactive supply well No. 7, and will consist of a 72-hour constant rate pumping test. Groundwater levels will be monitored in the pumping well, a nearby irrigation well, and a new adjacent multi-depth monitoring well to be constructed as part of this grant application. Results from aquifer tests are considered an important tool in groundwater investigations, and initial objectives of this proposed aquifer testing are to estimate aquifer parameters and refine the hydrogeological conceptual model in the area. Of primary focus, these aquifer tests will be used to preliminarily assess the feasibility of aquifer storage and recovery operations in the Sonoma Valley, a key strategy identified by the Basin Advisory Panel for long-term sustainability of groundwater resources in the Sonoma Valley. Specifically, data from the aquifer tests will be used to estimate appropriate recharge rates, area of influence, and potential groundwater-level draw-up and draw-down during future ASR pilot testing.

The aquifer testing will be conducted to determine the primary aquifer characteristics of hydraulic conductivity, transmissivity and storativity. These aquifer characteristics will be evaluated by comparing and most nearly matching the actual drawdowns in pumping and observation wells with those predicted in theoretical solutions (theoretical curves using

graphical methods). The aquifer testing will also be used to assess well efficiency; determine project drawdown in a well at different pumping rates; and estimate the radius of the cone of depression and effect of withdrawals on existing wells. Depending upon the results, the aquifer testing may also be used to evaluate aquifer anisotropy, leakage of semi-confined systems, and hydrogeologic boundaries (low permeability barriers or recharge boundaries).

Pressure transducers and data loggers will be used to collect electronic water level and barometric pressure data for the aquifer testing. The equipment will be set up to collect a large amount of data before, during and after the aquifer test, data that is easily transferred into an aquifer test analysis computer software program for analysis. Transducers will be calibrated prior to installation, and will generally be capable of accurately detecting changes of less than .005 psi, depending upon the anticipated drawdown in the well. In the pumping well, the pressure transducer will be matched with projected drawdown in the well. After installation, the transducers and recording equipment will be calibrated by comparing pressure readings to actual water level measurements taken with an electric water level meter (sounder). Periodic manual measurements of the water level will be made during the aquifer testing to verify that the transducers are functioning properly and as a backup to the pressure transducer data.

3.1 Baseline GW Data Collection

Prior to conducting the aquifer testing, baseline groundwater level data will be collected over a minimum two-week period using pressure transducers set in the pumping well No. 7, the new monitoring well, and the nearby irrigation well. The baseline groundwater level data will be used to assure the proper evaluation of aquifer testing results and any potential interference. During the baseline trend observation period, barometric pressure will be monitored and recorded to a sensitivity of plus or minus 0.01 inches of mercury. The barometric monitoring will continue throughout the test and for at least one day after the completion of the recovery measurement period. These data, when combined with the water level trends measured during the baseline period, will be used to correct for the effects of barometric changes that may occur during the test.

A step-drawdown test has already been conducted on City Well No. 7 (Winzler and Kelly, 2008). Data from this test will be evaluated to determine the most appropriate pumping rate for the constant rate test.

3.2 Constant-Rate Pumping Test

Subsequent to the baseline groundwater data collection, a constant rate pumping test will then be conducted in which the well will be pumped at one discharge rate for 72 hours. Water level data collection will occur prior to, during, and will continue through recovery (minimum 90 percent recovery of water levels in all monitored wells), as these data provides an additional estimation of aquifer characteristics. Discharge of water from the test will be conducted in accordance with San Francisco Bay Water Board requirements and will either be conveyed to a field located at the Sonoma Garden Park property for discharged under permit to a local storm drain.

3.3 Water Quality Sampling

Water quality sampling will be conducted in the pumping well during the constant rate pumping test. Field parameters will be monitored hourly during the first six hours and every four hours thereafter until pumping ceases for pH, temperature, and electrical conductivity. Three samples will be collected and analyzed for general minerals and total dissolved solids at the beginning, middle, and end of the pumping period of the test.

An appropriate graphical solution to the groundwater flow equation will be selected to fit to the observed data. There are many different choices of solutions, depending on what the results indicate, including:

- leaky aquitards
- unconfined flow (delayed yield)
- partial penetration of the pumping and monitoring wells
- finite wellbore radius — which can lead to wellbore storage
- dual porosity (typically in fractured rock)
- anisotropic aquifers,
- heterogeneous aquifers
- finite aquifers (the effects of physical boundaries are seen in the test), and combinations of the above situations

Nearly all aquifer test solution methods are based on the Theis solution, as it is founded upon the most simplifying assumptions, and this method will be used in initial analysis of the aquifer test results. Additional methods that may be used include steady-state Thiem method, Cooper Jacob straight line, and Neuman. Multiple methods will be used, dependent upon other factors listed above, to provide a range of values of aquifer parameters. Additionally, distance-drawdown plots will be conducted using Thiem-Jacob for the observations wells.

There are certain assumptions which go into aquifer testing and analysis; basic assumptions which are very important to understand regarding appropriately interpreting the test results, potential unanticipated hydrogeologic effects, data errors and uncertainty, well design and construction, and theoretical limitations. These assumptions commonly include:

1. Geologic formations are horizontal and infinite in horizontal extent
2. The aquifer is homogeneous, isotropic, and bounded by a bottom confining layer
3. The potentiometric surface of the aquifer is horizontal and steady state prior to starting pumping, and all changes in the potentiometric surface position are due to the well pumping
4. All flow toward the well is radial
5. Groundwater flow is horizontal, and groundwater density and viscosity are constant
6. Darcy's Law applies

7. The pumping and observation wells fully penetrate the aquifer being tested
8. The pumping well is 100 percent efficient, and has an infinitesimal diameter so well casing storage can be ignored

Task 4.0: Geochemical Modeling

Following receipt of laboratory analytical results from the aquifer matrix samples collected from the exploratory boring at the Sonoma Garden Park monitoring well, geochemical modeling will be performed to evaluate the potential for any adverse reactions or changes in water quality that could adversely affect the well or aquifer during subsequent ASR pilot-scale testing. The geochemical model will be run using current water quality data from the test well and the Water Agency's production sources of supply, combined with the compositional analysis of the geologic matrix obtained from the monitoring well. The two waters and the mineralogy from the aquifer formation will be 'mixed' in various proportions in the geochemical model simulation to assess the potential for the following:

- Adverse precipitation or gas evolution reactions
- Oxidation-Reduction reactions
- Ion Exchange reactions
- General mixing / dilution characterization
- Alkalinity (buffering capacity) changes
- Potential for leaching of undesirable compounds from the aquifer's geologic matrix.
- Saturation indices of individual aqueous components

In addition, biological and aqueous bio-nutrients will be checked in the water quality samples to assess the potential for increased bio-activity and/or bio-fouling potential for the proposed test program.

The geochemical simulations will be performed using the USGS aqueous modeling code PHREEQC-2 and the extensive thermodynamic database of WATEQ4F. PHREEQC-2 is a public-domain computer program developed by the USGS that is designed to perform a wide variety of low-temperature aqueous geochemical calculations. PHREEQC is based on an ion-association aqueous model and has capabilities for (1) speciation and saturation-index calculations; (2) batch-reaction and one-dimensional (1D) transport calculations involving reversible reactions, which include aqueous, mineral, gas, solid-solution, surface-complexation, and ion-exchange equilibria, and irreversible reactions, which include specified mole transfers of reactants, kinetically controlled reactions, mixing of solutions, and temperature changes; and (3) inverse modeling, which finds sets of mineral and gas mole transfers that account for differences in composition between waters, within specified compositional uncertainty limits.

The results of this task will be used for the design and permitting of a subsequent pilot-scale ASR demonstration test program, and development of the analytic and field laboratory

monitoring program for the test. If adverse geochemical reactions are predicted by the model, mitigating actions (such as pH or Redox adjustment of the Water Agency water prior to recharge) would be developed and incorporated into the program.

The water quality analyses will also be used to identify specific, geochemically stable, and unique aqueous indication compounds (i.e., "fingerprints") present in the Water Agency's recharge water but not in the native ground water. These compounds will be identified and incorporated into the analytic monitoring program to verify the presence/absence and the proportional component of the intermixed waters as the test program is implemented.

Task 5.0 – Reporting

Reporting of the monitoring well completions will include documentation of the location and design of the nested wells and the data collected during installation, development and sampling of the first monitoring event. The deliverable will include well completion and lithologic diagrams, monitoring results and summary of any pertinent findings and costs.

The results of the aquifer testing will include the raw data in tabular form, the plots of the data, copies of water quality analytical test results, complete calculations, and a summary of the results of the test. The aquifer testing reporting will include plan view maps, summary of aquifer testing procedures and protocols, updated hydrogeological conceptual model, tables of estimates of aquifer transmissivity, storativity, and if determined, leaky coefficients. The assumptions made in utilizing a particular method of analysis will also be included. All water level, water quality, and aquifer test result information will be made available to DWR.

The results of the geochemical modeling will include raw data in tabular format, plots of data, copies of water quality analytical test results, the complete calculations and a summary of the results of the geochemical modeling. The results will also include recommendations for next steps in aquifer storage and recovery pilot testing of City of Sonoma Well No. 7, including any possible mitigating factors such as pH adjustment of the recharge water.

The final document will be distributed to DWR, the Sonoma Valley Basin Advisory Panel, and cooperators in the Sonoma Valley.

The Water Agency will submit quarterly reports to DWR which will include an executive summary, description of project operations to date, description of major accomplishments, discussion of any issues or concerns that may affect the project schedule or budget, activities planned for the following quarter, cost and schedule status.